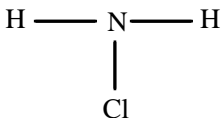
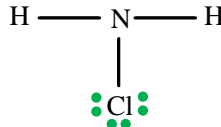
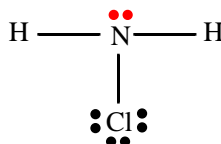


SCH4U – Drawing Lewis Structures

This document provides the steps to follow when drawing the Lewis structure of a molecular compound. For illustration purposes, we will be using NH_2Cl as an example throughout this document.

*** It is important that ALL valence electrons be shown in Lewis structures.

Step 1: Calculate the total number of valence electrons in the compound <ul style="list-style-type: none">To quickly identify the number of valence electrons, look at each element's group numberFor elements in groups 13 to 18, use the last digit. N: group 15, therefore 5 valence electrons H: group 1, therefore 1 valence electron Cl: group 17, therefore 7 valence electrons Total number of valence electrons = $1 \times 5 + 2 \times 1 + 1 \times 7 = 14$	
Step 2: Draw a skeleton of the Lewis structure <ul style="list-style-type: none">Place the central atom in the middle and the remaining atoms around it.<ul style="list-style-type: none">In general, the atom is the one that can accommodate the most number of bonds will work as a central atom.At other times, you will need to choose the unique atom or the least electronegative one in the compound.Link the central atom to each surrounding atom.<ul style="list-style-type: none">Each link represents a covalent bond in which two electrons are shared.	
Step 3: Have each surrounding atom satisfy the octet rule (8 valence electrons) <ul style="list-style-type: none">Exception: H (only accommodates two valence electrons)The valence electrons used come from the number of electrons calculated in Step 1. <p>Need to add 6 electrons around the chlorine atom (Cl)</p>	
Step 4: Add any remaining valence electrons to the central atom <ul style="list-style-type: none">Number of remaining valence electrons = total number of valence electrons (Step 1) the number of valence electrons used so far (Step 3). <p>Remaining valence electrons = $14 - 12 = 2$</p>	
Step 5: Identify (or tag) the number of valence electrons around the central atom. <ul style="list-style-type: none">If the number of valence electrons around the central atom does not match its number of valence electrons.<ul style="list-style-type: none">Consider using double bonds or triple bonds <p>Nitrogen is contributing 1 valence electron in each bond and has a lone pair of electrons (2 valence electrons). Thus, Nitrogen is contributing $3 \times 1 + 2 = 5$ valence electrons, which matches its number of valence electrons (5).</p>	